

ELENA A. ROZHKOVA

Scientist, Nanoscience

Nanophotonics and Biofunctional Structures Group
(nPBS)

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Education

Ph. D. Chemistry, Moscow State Institute of Fine Chemical Technology, Moscow, Russia
M. Sc. Chemical Engineering and Biotechnology, Moscow State Institute of Fine Chemical Technology, Moscow, Russia

Awards and honors

The University of Chicago Argonne LLC Board of Governors Distinguished Performance Award and a medal "In recognition of pioneering interdisciplinary cancer treatment research via bio-functionalized vortex structures" (**2013**)

Brain Research Foundation Fay/Frank Women's Council Award (**2007**)

Japan Society for Promotion of Science (JSPS) Fellowship (**2000-2002**)

Grants-in-Aid from the Ministry of Education, Culture, Sports, Science and Technology of Japan (**2000-2002**)

Russian National Academy of Science Early Career Award (**1998-2000**)

The Open Society Institute awards "In recognition and appreciation of outstanding achievements in the study of science" (**1996** and **1997**)

Research interests

- Design and development of functional nano-bio hybrids using synthesis, microfabrication and synthetic biology approaches
- Bio-inspired assemblies for clean energy production
- Signal-transduction at the interface of engineered materials and living systems
- Synchrotron X-ray imaging of cellular bioenergetic processes at nanoscale

Professional Experience

Argonne National Laboratory - Center for Nanoscale Materials (CNM) Scientist	<i>2012-present</i>
Argonne National Laboratory - Center for Nanoscale Materials (CNM) Assistant Scientist	<i>2007-2012</i>
University of Chicago, Biological Science Division Research associate	<i>2003-2007</i>
Princeton University, Department of Chemistry Research Staff Member	<i>2002-2003</i>
Tohoku University, Institute of Multidisciplinary Research for Advanced Materials JSPS Postdoctoral Fellow	<i>2000-2002</i>

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Selected Publications

Selected from 60 publications:

Bio-inspired catalysis and assemblies for clean energy production:

Photoinduced Electron Transfer Pathways in Hydrogen-Evolving Reduced Graphene Oxide-Boosted Hybrid Nano-Bio Catalyst, Wang, Peng; Dimitrijevic, Nada M.; Chang, Angela Y., Schaller, RD, Liu, YZ, Rajh T, and **Rozhkova E.A.**, *ACS Nano*, 8(8), 7995-8002 (2014)

High-Performance Bio-assisted Nanophotocatalyst for Hydrogen Production, S. Balasubramanian, P. Wang, R. D. Schaller, T. Rajh, and **E. A. Rozhkova**, *Nano Letters* 13, 3365–3371 (2013)

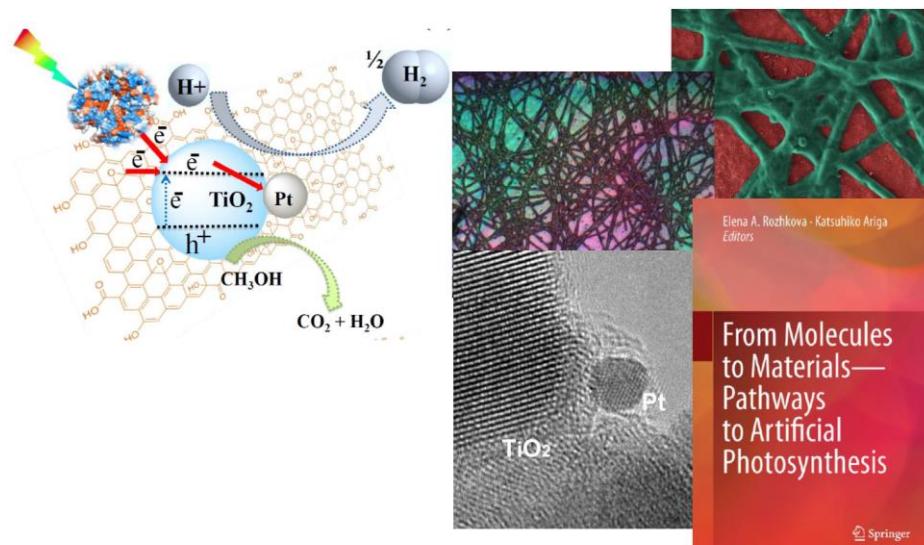
Functionalization of Nanostructured Hematite Thin Film Electrodes with the Light Harvesting Membrane Protein C-Phycocyanin yields Enhanced Photocurrent, D. K. Bora, E. A. Rozhkova, K. Schrantz, P. Wyss, A. Braun, T. Graule, E. C. Constable, *Advanced Functional Materials*, 22, 490–502 (2012)

E. A. Rozhkova, K. Ariga (Eds.) "From Molecules to Materials—Pathway to Artificial Photosynthesis" (321 pp. Springer-Nature International Publishing, (2015)

Profiling mechanisms of alkane hydroxylase activity in vivo using the diagnostic substrate norcarane, **E. A. Rozhkova**, J-C Chae, G.J. Zylstra, E.M. Bertrand, M. Alexander-Ozinskas, D. Deng, L.A. Moe, J.B. van Beilen, M. Danahy, J.T. Groves, R.N. Austin, *Chemistry & Biology* Volume: 14 Issue: 2 (165-172) (2007)

Reaction mechanisms of non-heme diiron hydroxylases characterized in whole cells, E. Bertrand, R. Sakai, **E. A. Rozhkova**, L. Moe, J.T. Groves, R.N. Austin, *Journal of Inorganic Biochemistry* Volume: 99 Issue: 10 (1998-2006) (2005)

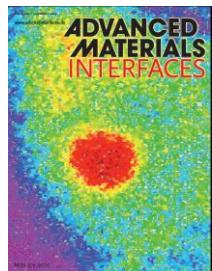
Interactions between the isolated oxygenase and reductase domains of neuronal nitric-oxide synthase - Assessing the role of calmodulin, **E.A. Rozhkova**, N Fujimoto, I Sagami, SN Daff, T Shimizu, *Journal of Biological Chemistry* 277 (19): 16888-16894 (2002)



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Stimuli-responsive materials within biological machinery for signal transduction, sensing and imaging

Ratiometric FRET from Quantum Dot Conjugated Stabilized Single Chain Variable Fragments for Quantitative Botulinum Neurotoxin Sensing, J. Lee, M. Asplund, R. Wilton, C. Rowland, E.A. Rozhkova, S. Forrester, D. Hannah, J. Carlson, E. Shevchenko, D. Schabacker, R. Schaller, *Nano Letters*, **Nano Letters**, 15(10):7161-7167 (2015)



Efficient Cisplatin Pro-Drug Delivery Visualized with Sub-100 nm Resolution: Interfacing Engineered Thermosensitive Magnetomicelles With a Living System, E. A. Vitol, **E. A. Rozhkova***, V. Rose, B. D. Stripe, N. R. Young, E. E. W. Cohen, L. Leoni, V. Novosad, *Adv. Mater. Interfaces*, 1400182 (2014)

Stimuli-responsive magnetic nanomicelles as multifunctional heat and cargo delivery vehicles, D.-H. Kim, E. A. Vitol, J. Liu, S. Balasubramanian, D. J. Gosztola, E. Cohen, V. Novosad, and **E. A. Rozhkova**, *Langmuir*, 29, 7425–7432 (2013) In the *Interfacial Nanoarchitectonics Special Issue*

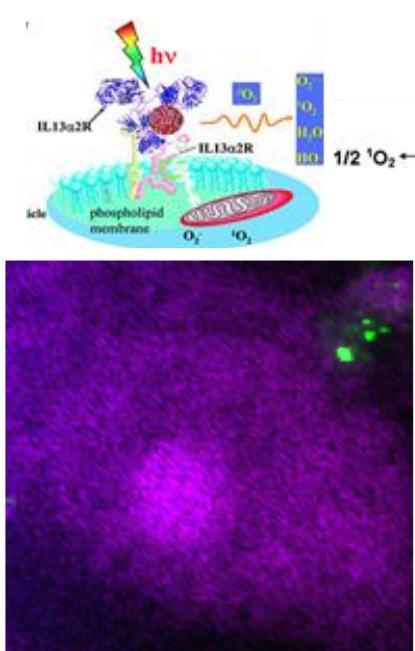
Microfabricated magnetic structures for future medicine: from sensors to cell actuators, E.A. Vitol, V. Novosad, and **E.A. Rozhkova**, *Nanomedicine*, 7(10), 1611-1624 (2012)



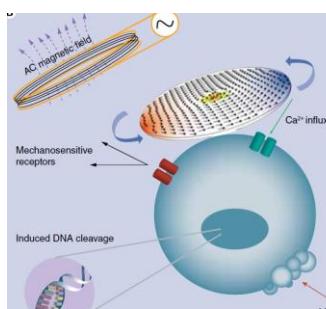
Multifunctional Ferromagnetic Disks for Modulating Cell Function, E.A. Vitol, V. Novosad, and **E.A. Rozhkova**, *IEEE TRANS MAGNETICS*, VOL. 48, NO. 11, (2012)

Nanoscale Materials for Tackling Brain Cancer: Recent Progress and Outlook, **E. A. Rozhkova**, *Advanced Materials*, 23, H136–H150 (2011)

Biofunctionalized magnetic-vortex microdiscs for targeted cancer-cell destruction, D-H Kim, **E. A. Rozhkova***, I. V. Ulasov, S. D. Bader, T. Rajh, M. S. Lesniak, V. Novosad, *Nature Materials* 9 (2): 165-171 (2010)



A High-Performance Nanobio Photocatalyst for Targeted Brain Cancer Therapy, E. A. Rozhkova, I. Ulasov, B. Lai, N. Dimitrijevic, M. S. Lesniak, T. Rajh, *Nano Letters* 9 (9): 3337-3342 (2009)



Dynamics of Localized Charges in Dopamine-Modified TiO₂ and their Effect on the Formation of Reactive Oxygen Species, N. M. Dimitrijevic, E. A. Rozhkova, T. Rajh, *JACS*, 131 (8): 2893-2899 (2009)